

SECTION IV: CURRICULUM VITAE OF BRIAN S. MCKAY, PHD

Chronology of Education

College

University of Wisconsin, Milwaukee, WI 1982-1987 B.S.

Graduate School

Medical College of Wisconsin, Milwaukee, WI 1989-1995 Ph.D.

Postdoctoral training

The Scripps Research Institute 1995-1997

Dissertation: "Development and Analysis of a Model System for Examining Epithelial Cell Organization". Advisor: Janice M. Burke, Ph.D.

Major field(s) Cell Biology

Chronology of Employment

Kohart Inc., Assistant Manager, 1981-1987

Medical College of Wisconsin, Laboratory Technologist, 1987-1989

Duke University, Assistant Professor, 1997-2002

University of Arizona, Assistant Professor, 2002-Present

Honors and Awards

The Scripps Research Institute Award for Excellence in Vascular Biology, 1996

Lawrence Retinal Research Travel Fellowship, 1993

Research to Prevent Blindness Career Development Award, 1998

Citizenship: USA

Service (for last 5 years, or period in current rank)

Teaching: Duke University: 2002-2002, Laboratory Instructor for Introduction to Cell Biology.

Duke University: 2000-2002, Laboratory Instructor for Microanatomy.

University of Arizona: 2003, Facilitator for Problem Based Learning.

University of Arizona: 2003, Laboratory Instructor for Histology.

University of Arizona: 2006, Lecturer in Medical Neuroscience

University of Arizona: 2006, Facilitator in Medical Neuroscience

University of Arizona: 2007, Facilitator in Medical Neuroscience

MS. Thesis Committee for Katherine M. Hardy. Gerontology Department, University of Arizona. Graduation: 2003

Ph.D. Dissertation Committee for Laura E. Lamb, Department of Chemistry. Duke University. Graduation: 2004.

Ph.D. Dissertation Committee for Tyson R. Kinnic, Physiological Science Training Program, University of Arizona. Graduation: 2006.

Ph.D. Dissertation Committee for Kaspar Russ, Department of Neuroscience, University of British Columbia, Vancouver, Canada. (*current*)

Outreach

Local/state

12/02 “Transplantation of RPE to Treat Age-Related Macular Dystrophy” Green Valley Community Center

1/03 “To RPE or Not to RPE: Transplantation is the Question” Diseases of the Aging Eye Community Symposia

1/03 “RPE Mythology” Science of Eye Disease

1/04 “RPE Transplantation for treating diseases of aging” Scottsdale Community Center.

5/2/05 “Ca⁺⁺ Switch Induction of RPE Differentiation” Association for Research in Vision and Ophthalmology, Ft. Lauderdale, FL

4/9/06 “AMD Research: Potential and Promise” Tucson Association for the Blind, Tucson, AZ

4/25/06 “Transplantation of RPE cells for disease Stem Cell Conference” Tucson, AZ.

10/28/06 “OA1 function in Pigmentation and Disease”, The Sunstone Healing Center, Tucson AZ.

12/2/06: “Cell Based Therapy for Parkinson’s Disease” The Parkinson’s Disease Research Program, Duvall Auditorium.

2007-present: Medical Research Building Neuroscience Program, Bi-monthly Parkinson’s Tours and lunches for the community.

Intramural University committee(s) Duke University Institutional Animal Care and Use Committee, Departmental representative, 1997-2002. Member: Visual Sciences Training Grant Committee 2004-present.

Extramural

Guest Editorial Board Member, Investigative Ophthalmology and Visual Science. (since 2001).

Veterans Administration internal scientific support Merit Review panel (since 2000).

Grant Reviews: The Ophthalmic Research Institute Of Australia (Since 2007)
Kentucky Science Foundation (Since 2006)

Panels: Scientific Advisory Board, Titan Pharmaceuticals, NJ. 2005-present
Scientific Advisory Board, Berlex Inc., CA 2005-present
Scientific Advisory Board, Schering AG, Germany, 2007-present
Scientific Advisory Board, Bayer AG, Germany, 2007-present
Collaborative Research Agreement, Lexicon Genetics Inc, TX. 2006-present
Stem Cell Research Advisory Committee, 2006-present

Manuscript reviews for the following journals: Journal of Biological Chemistry, Journal of Cell Science, Investigative Ophthalmology and Visual Science, Experimental Cell Research, Experimental Eye Research, Current Eye Research.

Publications/Creative Activity (Published or Accepted)

1. Jaffe, G. J., Green, G. D. J., **McKay, B. S.**, Hartz, A., and Williams, G. A. (1988). Intravitreal Clearance of Tissue Plasminogen-Activator in the Rabbit. *Archives of Ophthalmology* **106**, 969-972.
2. Burke, J. M., **McKay, B. S.**, and Jaffe, G. J. (1991). Retinal-Pigment Epithelial-Cells of the Posterior Pole Have Fewer Na/K Adenosine-Triphosphatase Pumps Than Peripheral Cells. *Investigative Ophthalmology & Visual Science* **32**, 2042-2046.
3. Arrindell, E. L., **McKay, B. S.**, Jaffe, G. J., and Burke, J. M. (1992). Modulation of Potassium-Transport in Cultured Retinal-Pigment Epithelium and Retinal Glial-Cells by Serum and Epidermal Growth-Factor. *Experimental Cell Research* **203**, 192-197.
4. Murray, T. G., Jaffe, G. J., **McKay, B. S.**, Han, D. P., Burke, J. M., and Abrams, G. W. (1992). Collagen shield delivery of tissue plasminogen activator: functional and pharmacokinetic studies of anterior segment delivery. *Refract Corneal Surg* **8**, 44-8; discussion 48-53.
5. Burke, J. M., and **McKay, B. S.** (1993). In-Vitro Aging of Bovine and Human Retinal-Pigment Epithelium - Number and Activity of the Na/K Atpase Pump. *Experimental Eye Research* **57**, 51-57.
6. Suson, J. D., Nash, R. W., **McKay, B. S.**, and Burke, J. M. (1993). Regional and Sodium-Dependent Variation in Atp and Sodium-Pump Number in Rpe. *Investigative Ophthalmology & Visual Science* **34**, 872-872.
7. **McKay, B. S.**, and Burke, J. M. (1994). Separation of Phenotypically Distinct Subpopulations of Cultured Human Retinal-Pigment Epithelial-Cells. *Experimental Cell Research* **213**, 85-92.
8. Nash, R. W., **McKay, B. S.**, and Burke, J. M. (1994). The Response of Cultured Human Retinal-Pigment Epithelium to Hypoxia - a Comparison to Other Cell-Types. *Investigative Ophthalmology & Visual Science* **35**, 2850-2856.
9. Burke, J. M., Skumatz, C. M. B., Irving, P. E., and **McKay, B. S.** (1996). Phenotypic heterogeneity of retinal pigment epithelial cells in vitro and in situ. *Experimental Eye Research* **62**, 63-73.
10. **McKay, B. S.**, Annis, D. S., Honda, S., Christie, D., and Kunicki, T. J. (1996). Molecular requirements for assembly and function of a minimized human integrin alphaIIb beta3. *Journal of Biological Chemistry* **271**, 30544-7.
11. **McKay, B. S.**, and Burke, J. M. (1997). Cell association increases RPE outgrowth from primary explant. *Current Eye Research* **16**, 891-9.
12. **McKay, B. S.**, Irving, P. E., Skumatz, C. M. B., and Burke, J. M. (1997). Cell-cell adhesion molecules and the development of an epithelial phenotype in cultured human retinal pigment epithelial cells. *Experimental Eye Research* **65**, 661-671.
13. Stamer, W. D., Bok, D., Hu, J., Jaffe, G. J., and **McKay, B. S.** (2003). Aquaporin-1 channels in human retinal pigment epithelium: role in transepithelial water movement. *Investigative Ophthalmology & Visual Science* **44**, 2803-8.
14. Yang, P., **McKay, B. S.**, Allen, J. B., Roberts, W., and Jaffe, G. J. (2003). Effect of Mutant IκB on Cytokine-induced Activation of Nf-κB in Cultured Human RPE Cells. *Investigative Ophthalmology & Visual Science* **44**, 1339-1347.
15. Yang, P., **McKay, B. S.**, Allen, J. B., and Jaffe, G. J. (2004). Effect of NF-kappa B inhibition on TNF-alpha-induced apoptosis in human RPE cells. *Investigative Ophthalmology & Visual Science* **45**, 2438-2446.

16. Hardy, K. M., Hoffman, E. A., Gonzalez, P., **McKay, B. S.**, and Stamer, W. D. (2005). Extracellular trafficking of myocilin in human trabecular meshwork cells. *Journal of Biological Chemistry* **280**, 28917-28926.
17. Hoffman, E. A., Conley, S. M., Stamer, W. D., and **McKay, B. S.** (2005). Barriers to productive transfection of trabecular meshwork cells. *Molecular Vision* **11**, 869-875.
18. Conley, S. M., **McKay, B. S.**, Gandolfi, A. J., and Stamer, W. D. (2006). Alterations in human trabecular meshwork cell homeostasis by selenium. *Experimental Eye Research* **82**, 637-47.
19. McLaughlin, P. J., Chen, Q., Horiguchi, M., Starcher, B. C., Stanton, J. B., Broekelmann, T. J., Marmorstein, A. D., **McKay, B.S.**, Mecham, R., Nakamura, T., and Marmorstein, L. Y. (2006). Targeted disruption of fibulin-4 abolishes elastogenesis and causes perinatal lethality in mice. *Mol Cell Biol* **26**, 1700-9.
20. Rak, D. J., Hardy, K. M., Jaffe, G. J., and **McKay, B. S.** (2006). Ca⁺⁺-switch induction of RPE differentiation. *Experimental Eye Research* **82**, 648-56.
21. **McKay B. S.**, Goodman B, Falk T, Sherman S. J. Retinal pigment epithelial cell transplantation could provide trophic support in Parkinson's disease: results from an in vitro model system. *Experimental Neurology* 2006;201 (1):234-43.
22. Stamer W. D, Perkumas K, Hoffman E. A, Roberts B. C, Epstein D. L, **McKay B. S.** Coiled-Coil Targeting of Myocilin to Intracellular Membranes. *Experimental Eye Research* 2006;83 (6):1386-95. Perkumas K, Hoffman EA,
23. Perkumas K, Hoffman E. A, **McKay B. S.**, Allingham R. R, Stamer W. D. Myocilin-Associated Exosomes in Human Ocular Samples *Experimental Eye Research* 2007;84 (1):209-12.
24. Bakall B, Radu R, Stanton J. B., Burke J.M, McKay B. S., Wadelius C, Mullins R, Stone E, Travis G.H, Marmorstein A.D. Enhanced accumulation of A2E in individuals homozygous or heterozygous for mutations in BEST1 (VMD2). *Experimental Eye Research*. 2007 Jul;85(1):34-43.
25. Ling Y, Kelly U, Ebright J. N., Malek G, Saloupis P, Rickman D, McKay B. S., Arshavsky V. Y., Bowes – Rickmana C. Oxidative Stress-Induced Expression and Modulation of Phosphatase of Regenerating Liver-1 (PRL-1) in Mammalian Retina. *Biochimica et Biophysica Acta (BBA) - Molecular Cell Research*. 2007. Sep;1773(9):1473-82.

Work in Progress

My main focus of research remains in the area of understanding Age-Related Macular Degeneration (AMD). Much of my current work in the laboratory is aimed towards understanding the interactions between the retinal pigment epithelium (RPE) and the neurosensory retina because a key aspect of AMD is the primary loss of the RPE cells which then contributes or causes the loss of the neurosensory retina. One interesting factor in the etiology of AMD is that individuals with dark RPE pigmentation have little vision loss to AMD while those most severely affected tend to have light pigmentation. Thus, there is a linkage between AMD and the level of pigmentation in the RPE and I am currently investigating how pigmentation could contribute to neuronal survival.

Media

Radio:

12/02 KZAZ 'Star of the Day' discussing the use of cultured cells to treat AMD and Parkinson's Disease.

Television:

12/02 KVOA News at 6&10pm discussing the laboratory breakthroughs to treat AMD.

2/03 KVOA "One on One" Discussion of how laboratory research and recent breakthroughs may relate to AMD and Parkinson's Disease treatments.

2/25/07: Fox News :In Focus. McKay, Cell based therapies for Parkinson's Disease

3/11/07: KTTU: In Focus with Bob Lee: Parkinson's Disease.

- List of membership in oversight committees at College or University level
none

Scholarly Presentations

(for last 5 years, or period in current rank;
distinguish invited vs. submitted presentations)

Invited Seminars

"Myocilin Functions in the Secretory pathway" September 1999, Asheboro, North Carolina. Invited Speaker, Department of Cell Biology, Duke University Medical Center.

"Myocilin: a Molecular Address that Delivers Adhesion Molecules to Nascent Junctions" December 1999, Chapel Hill, North Carolina. Department of Cell Biology, Integrin Special Interest Group. University of North Carolina at Chapel Hill.

"Myocilin is a SNARE Associated Protein" April 2000, San Francisco, CA,. Glaucoma Research Foundation Catalyst Meeting.

"Autologous RPE transplantation for treatment of AMD and Parkinson's Disease"
Translation Research Seminar

"Transplantation of RPE cells for disease Stem Cell Conference" April 2006 Stem Cell Conference, Tucson, AZ.

"OA1 function in Pigmentation and Disease", October, 2006. The Sunstone Healing Center, Tucson, AZ.

Symposia

"Molecular Basis of Glaucoma Studied through Myocilin Mutations" August, 2003. Inherited Eye Disease Symposia, Duke University

Submitted Presentations (Abstracts)

1. Yang, P., McKay, B. S., Allen, J. B., Roberts, W. L. & Jaffe, G. J. (2003) *Investigative Ophthalmology & Visual Science* **44**, 1339-47.
2. McKay, B. S. (2003) *Investigative Ophthalmology & Visual Science* **44**, U76-U76.
3. Yang, P., Roberts, W. L., Allen, J. B., McKay, B. S. & Jaffe, G. J. (2002) *Investigative Ophthalmology & Visual Science* **43**, U1291-U1291.
4. Stamer, W., Jaffe, G. J. & McKay, B. S. (2002) *Investigative Ophthalmology & Visual Science* **43**, U1302-U1302.
5. McKay, B. S., Bao, W. & Klintworth, G. K. (2002) *Investigative Ophthalmology & Visual Science* **43**, U381-U381.
6. Lamb, L. E., Simon, J. D. & McKay, B. S. (2002) *Investigative Ophthalmology & Visual Science* **43**, U1303-U1303.
7. Hoffman, E. A., Ryan, E. P., McKay, B. S. & Stamer, W. D. (2002) *Investigative Ophthalmology & Visual Science* **43**, U231-U231.

8. Rickman, C. B., McKay, B. S., Yarovinsky, T. O. & Rickman, D. W. (2001) *Investigative Ophthalmology & Visual Science* **42**, S770-S770.
9. McKay, B. S., Erickson, H. P. & Stamer, W. D. (2001) *Investigative Ophthalmology & Visual Science* **42**, S193-S193.
10. Stamer, W. D., Allingham, R. R., Roberts, B. C. & McKay, B. S. (2000) *Investigative Ophthalmology & Visual Science* **41**, S523-S523.
11. McKay, B. S., Roberts, B. C. & Stamer, W. D. (2000) *Investigative Ophthalmology & Visual Science* **41**, S843-S843.
12. McKay, B. S., Stamer, W. D. & Erickson, H. P. (2000) *Molecular Biology of the Cell* **11**, 116A-116A.
13. McMillan, R., Bowditch, R. D., Tani, P., Lopez-Dee, J., McKay, B., Kunicki, T. & Goodnight, S. (1999) *Blood* **94**, 13A-13A.
14. McKay, B. S., Roberts, B. C. & Stamer, W. D. (1999) *Molecular Biology of the Cell* **10**, 410A-410A.
15. Denny, J. P., Jaffe, G. J. & McKay, B. S. (1999) *Investigative Ophthalmology & Visual Science* **40**, S924-S924.
16. Stamer, W. D., Roberts, B. C., Epstein, D. L. & McKay, B. S. (1998) *Molecular Biology of the Cell* **9**, 206A-206A.
17. McKay, B. S., Annis, D. S., Honda, S., Christie, D. J. & Kunicki, T. J. (1997) *Thrombosis and Haemostasis*, P2744-P2744.
18. Kunicki, T. J. & McKay, B. S. (1997) *Blood* **90**, 1909-1909.
19. McKay, B. S., Annis, D. S., Honda, S., Christie, D. & Kunicki, T. J. (1996) *Molecular Biology of the Cell* **7**, 1435-1435.
20. McKay, B. S., Honda, S., Annis, D. S. & Kunicki, T. J. (1995) *Blood* **86**, 2204-2204.
21. Suson, J. D., Nash, R. W., McKay, B. S. & Burke, J. M. (1993) *Investigative Ophthalmology & Visual Science* **34**, 872-872.
22. Nash, R. W., McKay, B. S., Suson, J. D. & Burke, J. M. (1993) *Investigative Ophthalmology & Visual Science* **34**, 869-869.
23. McKay, B. S., Sabina, R. L. & Burke, J. M. (1993) *Investigative Ophthalmology & Visual Science* **34**, 983-983.
24. McKay, B. S., Suson, J. D. & Burke, J. M. (1992) *Investigative Ophthalmology & Visual Science* **33**, 1204-1204.
25. McKay, B. S. & Burke, J. M. (1992) *Molecular Biology of the Cell* **3**, A290-A290.
26. McKay, B. S. & Burke, J. M. (1991) *Investigative Ophthalmology & Visual Science* **32**, 1303-1303.

Grants and Contracts

(list percent effort on grant;
role [PI, co-PI]; source and amount)

Past Funding

NHLB-	Individual NRSA	(1995-1997)		70,000	3 years
Fight for Sight-	Grant-in-Aid	(1997-1998)	PI	11,000	1 year
Adler Foundation	-Grant-in-Aid	(1997-1998)	PI	25,000	1 year
Research to Prevent Blindness, Career Development Award					
				\$160,000	4 years
National Glaucoma Research Foundation (Co-PI)					

Signed Statement by Candidate

The candidate's signature should appear on the last page of the curriculum vitae with the following statement:

This is a true and accurate statement of my activities and accomplishments. I understand that misrepresentation in securing promotion and tenure may lead to dismissal or suspension under ABOR Policy 6-201 J.1.b.